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SCHOOL AND SOCIETY

Volume XXVI SATURDAY, OCTOBER 22, 1927 Number 669

GRADUATE STUDY IN THE ENGINEERING SCHOOLS[1]

BEFORE one can intelligently reflect on or discuss this subject it is necessary to take two underlying topics clearly in mind. These are:

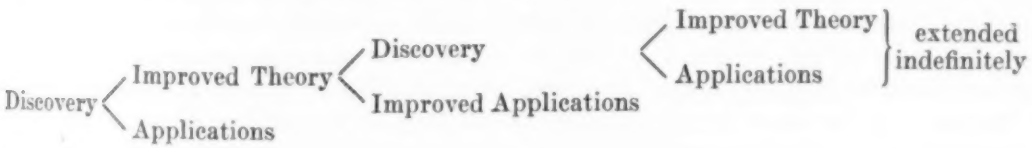
What is the aim of graduate study in the engineering schools?

And the even more comprehensive topic, What is graduate study?

When invited to address this meeting on the subject is seemed to me well to outline and define these two topics as a directive of our thought. It is a characteristic of a developing science, profession, business, society or civilization that the connotations of words are likely to change. The central meaning of a word may continue, but its fringe or marginal meaning may change; in one instance the fringe may shrink and atrophy so that the meaning of the word becomes nucleated and more specific, while in other instances the fringes may expand and develop until the cloak of connotations becomes generally enough used to vie with or exceed in importance the original signification of the word. This is a sign of progress. A vividly living language is a growing language. Language has many characteristics in common with those ascribed to biological creatures. A stationary state too often spells ineffectiveness and is prophetic of decadence.

Engineering possesses a basis of underlying sciences and arts of such rapid growth in this age that the exponents of engineering education composing this audience may be expected to ascribe different intellectual pictures to various words or groups of words commonly and mutually used by us. I therefore feel sure that my effort to define needs no apology.

Amazing, in the engineering industries, as are the variety and scope of useful applications of understood natural phenomena, still more amazing is the avidity with which new discoveries are directed into useful channels, and improved theories are seized upon as guides to improved or widened applications of old science. The inspired chain of intellectual and material development goes on with accelerated progress.



Improved applications often have the effect of arousing additional tastes, the desire to satisfy which produces "needs" and these cause additional stimulation to efforts for further discoveries and applications.

The engineer who makes or directs the applications may be and frequently must be as well versed in fundamental sciences as the scientific discoverer. Indeed the engineer and the discoverer of this age are

[1] Address to the Division of Deans and Administrative Officers at the 35th Annual Meeting of the Society for the Promotion of Engineering Education, Orono, Me., June 29, 1927.

not infrequently embodied as one individual, as also was the case, for instance, of Archimedes and Leonardo da Vinci, ancient but marvelous examples.

Our generation finds a new demand. Men are no longer playthings of nature nor pawns of kings and nobles. This is our great distinction over preceding ages. It is a distinction bearing the quality of elevated nobility. Character and service supersede force for the principal moving cause in human society. Character is so mighty an influence that we approach the ideal where character coupled with intelligence, instead of brawn, makes might. Character is human. Its attributes include the factor connoted in the societarian relations by the word Service. Engineering and the education for engineering contribute to this elevated progress in a degree not yet sufficiently appreciated either in the world of education or in the world at large. Engineering education considers and expounds the known materials and forces provided by nature, it classifies their characteristics, their interrelations and their relations to human affairs and human welfare, it encourages further discovery relating to materials and forces and itself aids in discovery.

The present generation plays its part with three major branches of applied science—agriculture, medicine and engineering. As we know them, these are all founded on modern scientific discoveries. Agriculture has not come forward commensurately with preventive medicine and the engineering industries. But with the automobile, the tractor, manufactured nitrates, diversified cropping, hard surfaced roads, electrical power in the rural communities all established, as they bid fair to be, agriculture may rival its brothers in wonders. The engineers have a responsibility in this. The problem of diversified cropping, I take it, is the farmers' own; but for the automobiles (whether for passengers or goods), the tractor, manufactured nitrates, hard surfaced roads and electric power the farmer is compelled to look to engineers and the engineering industries. Even in sanitation, the practitioners of preventive medicine turn to engineering for the broader foundations like potable water supply, safe disposal of sewage and wastes, ventilation, heating and lighting.

Let me enumerate some of the grounds for the responsibility of the engineers in this nation:

Our population relatively to that of the world is not large, being only some six or seven per cent. of the total population of the earth, and it is located on a somewhat smaller proportion of land-area of the world. But we are richly endowed. Large proportions of many of the world's most important commodities are produced by us. Some of those of which we produce more than half of the world's total production are: pig iron, steel, copper, lead, zinc, petroleum, sulphur, timber. Their importance can not fail of recognition. Our railroad lines comprise more than one third of the mileage of the railroad lines in the world, and carry a traffic which, measured in ton-miles, is equal to the railroad traffic of the rest of the world. We mine two fifths of the annual coal supply of the world. We own automobiles in such multitudes and use telephones in such numbers that other nationalities look upon us in amazement. We furnish the workmen in our industries an amount of mechanical and electrical power as an aid to production, which is between two and three times as much per man as is provided in any other nation. We have from eight to ten billions of dollars of savings each year to put into the expansion of creative enterprise, and this comfortable sum is the offspring of intellectual processes applied to improving and increasing production. We afford workmen mechanical power and

power of mind, and provide supervisors who encourage them in the use of both.

Consider then our riches and our proportionate responsibilities. The engineers are largely responsible for means of producing the various commodities named, and for modern transportation and quick intercommunication. On them rests responsibility for further development. On them also rests much responsibility for limiting and ultimately stopping the extraordinary wastes which occur now as characteristics of our processes of production and distribution. Such wastes can not go on forever. They must be stopped. The unfolding of more refined methods of applying science to commodity production and distribution is a primary need. Necessity seems always to produce improved intelligence, and through suitable engineering education the establishment of that improved intelligence may be guided and accelerated. The discovery of principles and the invention of improved methods of production or of improved methods of storage and of distribution are of high promise of fertility and profit to the world. The great work of our distinguished Secretary Hoover and his staff of men engaged in standardization and simplification of industrial practice is a sign of the times and its needs. In engineering, the days of the empiricists who carry on according to the ways of their fathers because their fathers did so before them are almost gone and the days of scientific and economic background have come.

With such abundance of materials at elbow, we can not do our duty to ourselves or to civilization if we follow the old, well-beaten, wasteful paths of practice determined by empiricism. The reduction of now incalculable wastes of men and materials, the improvement of methods, are responsibilities of the rising generation of engineers. The scientist engineer is the present bulwark of life and its comforts. The direct-minded engineering intelligence is a primary force in progress. Engineering education is planned with these things as a background.

In undergraduate engineering curricula we provide for a knowledge of natural phenomena and their interrelations, some acquaintance with human affairs, a direct-minded facing of facts and direct-minded reasoning upon them. This secures to young men a ground work for serviceability in the engineering world, with all of its great industries and public works, which is very valuable. In the administration of the curricula we should try to inculcate a lively investigatory interest and a spirit for individually continuing education which is signalized by the word "Commencement" often used to denote the exercises when diplomas are conferred by engineering schools and other institutions of education and learning.

The aim of graduate study in the engineering schools goes farther. It should enable the student to deepen his exploratory shafts and drive galleries in the fabric of physical and human phenomena and strengthen his grasp of their relationships. This process is intensive and individual. If gain is to be accomplished in reasonable time it requires the selection by each student of a rather specific aspect in the broader field of engineering which comprised his undergraduate studies, to which special aspect high emphasis shall be given by investigatory study and research. The aim being to improve depth, thoroughness of grasp, and investigatory resourcefulness and enterprise, it is quite apart from a process of expanding the range of studies by pursuing additional undergraduate subjects, such, for instance, as may be associated with a curriculum in some branch of engineering collateral to the engineering branch characteristic of the curriculum originally pursued by the student, or such as may be found in some more distantly

associated field of learning. For promising graduates who simultaneously are young enough to afford the time within their youth, are free of prohibitive obligations and possess ambition for a creative career, my observation of numerous graduate students and their after careers shows that the fruits of pursuing this aim are manifestly large. I presume that those of us here who have enjoyed the advantages of such study will concur in support of its abundant fruitfulness.

The aim outlined goes far toward defining what graduate study is, but it is fitting to trace this latter thread still farther. The phrase "graduate study" in engineering when correctly interpreted, connotes individual, advanced study, under competent direction and encouragement, of some aspect of the student's chosen general field which he selects on account of his personal bent or interest. It is limited to few simultaneous topics, such as three or four, in order to be thorough (though collateral reading may be comprehensive) and is associated with scientific research. Engineering teachers sometimes confuse the word research as used in education by extending its sense to include conventional testing, measurements or computations in addition to veritable research; but there is in reality a notable distinction.

Research involves diligent search for a new or improved process, or a new principle or unexpected combination of principles, or perhaps a new method of verifying already accepted facts. It calls for notable powers of extemporization and invention. It is an intellectual process of high order. Engineers holding posts of creative effort in designing structures, equipment or plant; in operation of plant; or in directive administration, must constantly invoke this process. Engineering education should aim at establishing ability in its use, and graduate study worthy the name consists substantially altogether of its exercise.

A survey in larger dimensions or requiring a peculiar bit of ingenuity, a test of a machine or a power plant by conventional codes, the assay of some ore of peculiar but already known qualities, a study of economic circuit locations or characteristics of known types, and such-like, which are examples of most undergraduate theses, are not research in the educational sense of that word's usage. They may give exercise in ingenuity in utilizing expedients for overcoming difficulties and call for some extemporization, and are good in their way; but they are not research. They are not aimed at establishing new processes, discovering new principles, or inventing and demonstrating new methods for independent verification of the known. Graduate study for engineering students must be pitched on a different standard from the undergraduate ideals of the majority of engineering schools.

A stage for effective graduate study in any branch of engineering requires comprehensive libraries and laboratories, and a teaching staff possessing notable grasp of the mathematical-physics and economics applicable in the branch concerned, a wide acquaintance with the manner of their applications, and a studious zeal for discovery. Laboring in paths chosen according to his individual tastes, located in an environment of facilities and an atmosphere of encouragement, the graduate student should be able to carry on with an intoxication of interest.

> For he on honey-dew hath fed
> And drunk the milk of Paradise.

The foundation of this spirit, moreover, should be developed in the undergraduate work.

Few engineering schools are prepared to provide opportunities for such graduate

study. Teachers assigned to a traditional fifteen to eighteen hours per week of class teaching seldom have fertility left for the processes of exacting inquiry or of stimulating graduate students. Only those exceptional ones who possess superabundant energy and indestructible scientific curiosity can, under such conditions, successfully direct even occasional graduate students. Half the traditional number of assigned hours is often too many for a teacher in graduate work who, through his accomplishments and his subject, attracts many such students. Relief from an excess of hours of teaching and a limitation of subjects taught by the individual are preessentials to establishing adequate graduate work. The lecturer (*i.e.*, the leader) in a graduate subject must be secure in the time and opportunity to make and hold for himself a place recognized for scholarly leadership in his speciality. The claims of study and creative investigation must be upon him always. His originality and resourcefulness and his productivity should stimulate his students. A topic for graduate study should grow year by year under the hand of the leader and his students, and each successive year it properly may be unfolded in the lectures from a new aspect. Laboratories equipped with standard forms of machinery and equipment (except fundamental measuring devices and ample sources of energy) are of little more service than museums of the arts for this stimulating and useful kind of study. Special devices to use in special investigations and measurements, brought to embodiment through improvisation and by expedients guided by scientific analysis, make up the major equipment for a laboratory for the purpose here under consideration. The equipment of such a laboratory is constantly changing, as the particular problems under investigation progress or are suspended. This of itself additionally serves to stimulate the enterprise, resourcefulness and self-reliance of the students who are associated individually or by groups with the various enquiries that are progressing in the laboratory.

Every teacher suitable for supervising the work of graduate students in engineering must possess notable analytical powers, an insatiable appetite for delving and an indestructible scientific curiosity. He also ought to possess powers of orderly and clear exposition that would ornament the ablest teachers in undergraduate subjects. Such men are not found in large numbers. Would that they were; for their influence may be wisely sought in undergraduate engineering instruction as well as in graduate work.

Moreover it is not only accomplishments of the present generation with which these teachers must be familiar. I do not concur with the thesis of some of my colleagues that modern scientists and notably the engineers can find little of interest or value in studying the past. On the contrary, I believe that no wide-awake, intellectually sound engineer can fail to secure both interest and value from familiarity with the characteristics of ancient peoples and the affairs of ancient nations. Among many other things one should learn from them a pragmatic optimism relative to our own period by observing the great accomplishment that can be produced by human strength even without the wonderful auxiliaries of to-day, provided the strength is applied under wisely planned management; and thus one should recognize the probably even greater advantage of wisdom in management to-day, when we may make effective use of modern unintelligent but powerful auxiliaries to human labor.

It is also wise for the engineer who hopes to become a man of creative importance in the industries to study the influence which is impressed on society by applied science and improved economic theory. In the ancient days only few en-

joyed any fruits of the great things and the submerged 90 per cent. were no better supported than domestic beasts. With us the contrast between the most favored and the least favored among the free residents of this nation is probably no greater than between the extremes in the minority patrician classes of Greece or Rome at their zeniths. Engineering teachers, and notably teachers of graduate students, should have evolved and enriched their social views by historical and philosophical reading.

To follow such threads even slightly requires free reading and a comprehensive library as source. For the depth and thoroughness needed for the special study of the graduate student, the library should be embracing and great in natural science and engineering. To secure the collateral influences, it should be reasonably comprehensive in the humanities.

I have earlier herein referred to the fruitfulness of such graduate study for graduates of particular promise. The statistics gathered through the office of the society's director of investigation show that there is a demand for resident instruction to graduates. As far as data are available, the number of students registered as pursuing graduate work in engineering compared with the number of senior students in the academic year 1924–5 were:

Principal branch	Graduate students	Senior students
Mining and metallurgical engineering	67	332
Civil engineering	84	2271
Mechanical engineering	89	1831
Electrical engineering	230	2279
Chemical engineering	153	746
Other branches	379	1130
Total	1002	8589

The data are not exact, but they are indicative of the relations. The total number registered as pursuing graduate work is not notable in comparison with the number registered as seniors, but it is large enough to merit attention, and it is growing. Graduate study in the engineering schools perhaps never should command a clientele larger than from 15 to 25 per cent. as numerous as the seniors. It should however be provided for fittingly. Of all the 164 engineering schools which grant degrees in the United States and Canada but few have the combination of library, laboratory facilities and distinguished staff which enables them to carry on effectually in graduate work. In this exigency a definite policy, embarked upon by those engineering schools whose resources are absorbed by undergraduate instruction, of counseling any notably promising man in each senior class of the advantages of graduate study at an engineering school eminently manned and equipped in the specific branch of his greatest interest, would bestow advantages on the students and credit on the schools. A somewhat sporadic student migration for graduate study is observable among the more richly manned and competently equipped engineering schools; and a tendency exists for graduates of the less richly manned to turn for graduate study to the more richly manned.

This is a favorable stage for this society to establish a directive influence on post-graduate study in the engineering schools. It would be a service to the 164 engineering schools, to the engineering profession, and to engineering education if this society should express in resolutions the principle that graduate work in the engineering schools should be carried on only in those schools which are comprehensively equipped with libraries and laboratories and sufficiently manned so that the staff may enjoy freedom from excessive assignments of classroom hours; also that the teachers' assignments in undergraduate work should be made with full consideration that each teacher should have time for and be expected to carry on individual study and investigation well in advance of

the conventional limits of knowledge set by the undergraduate curriculum. Such action by resolution would be a credit to the society and educative to boards of trustees. It would result in better understanding between engineering faculties and boards of trustees. Graduate work in the engineering schools would for a period be substantially concentrated in a relatively few schools which are notably manned. Some graduate work would appear here and there in other schools around some exceptional individuals in the staff. Thus the whole would be fertilized but the major expense during the period of gradual fuller development of graduate work would be cast upon those engineering schools most capable of meeting it.

DUGALD C. JACKSON
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

THE SUPERVISOR OF STUDY IN THE HIGH SCHOOL

IMPROVING the study habits of high-school pupils has for some time been a matter of concern among those interested in the improvement of secondary education. Since 1911 or 1912, when the supervised study movement got under way, several experiments and variations in technique have been tried. Although much has been promised for supervised study the results do not show unqualified success. It seems that the success of the plan depends on the skill, interest and integrity of the individual teacher in charge. This paper presents a plea for the development of the office of supervisor of study as one solution to the problem.

Present practice is divided between the supervision of study by the classroom teacher and its supervision in large study halls. Supervision of study by the teacher is advocated because it is claimed that the teacher best knows the subject and is, therefore, in the prime position to give assistance. Supervision by the director of study hall, on the other hand, is advocated on the grounds that what is needed is some one who knows the technique of study. Both of these plans neglect the pupil as an entire individual. A broad point of view would seem to require someone who not only knows the subject, the technique of study, but also the abilities, the interests, the home conditions and the needs of pupils. Such a person is designated in this paper as the "supervisor of study."

There are certain advantages in both the plan of studying under the direction of the teacher and under the direction of the special study-hall supervisor. In favor of the former there is the matter of economy of effort when the study group is working on the same problem. If the divided period is used, during the part of the period devoted to independent study the class is working on the same topic and the teacher will find it easy to go from one pupil to another to offer suggestions or clues or put the crucial question. Small groups also can be gathered to clear up knotty points. A second argument in favor of study direction by the class teacher is that only the teacher is fully aware of the special needs and difficulties of individual pupils. No general supervisor can possibly gain the intimate knowledge of each pupil's particular difficulties that the teacher has. A third argument is that in the classroom the teacher can have conveniently at hand materials, collateral readings, equipment, etc. In this sense the classroom becomes a laboratory during the study period. The teacher is best qualified to care for equipment in her own room, and can there make such equipment most available. Pupils have a better chance of acquiring an inherent interest in a subject if they are surrounded by the tools of their work in the very room where the class meets rather

than in some impersonal study hall. Finally, there is a continuity of work when recitation and independent study are held in the same room and under the same teacher rather than in a strange room and under a strange (to that subject) supervisor.

In favor of study in a special study hall under a special supervisor is the fact that the technique of study may be kept foremost in mind under that arrangement. There has developed recently a belief that study is a set of skills and habits as difficult to learn and as necessary for school success as any of the school subjects themselves. The classroom teacher is ordinarily not aware that study presents any special difficulties or techniques. These special techniques can best be handled by a specialist who understands the problem and methods of meeting it. A second argument in favor of the study hall is that pupils may there be treated as individuals and not merely with respect to their relation to a single subject. The study supervisor may determine a pupil's greatest needs and may place the emphasis where the greatest benefit may result. The pupil's needs are seen not in the light of his successes and failures in a single subject but relative to his total development and all his school relationships.

Study hall has ordinarily been one of the saddest features of high-school organization. In my own high-school teaching experience I found supervision of study hall the most disagreeable task. As usually conducted the study hall, often the school auditorium, is the dumping ground for all pupils who are not in regular recitations. All pupils with vacant periods are scheduled for study hall. If pupils are sent out of the recitation for disciplinary reasons they may be sent to study hall. Pupils found wandering about the corridors, the basement or the grounds are sent into study hall. Often the same room used for study is also used for after-school detention or for Saturday and afternoon make-up work. Since pupils may be sent into this room for any of these purposes the room soon gathers a connotation which is not solely that of efficient work. Usually the teacher in charge makes it his duty to see that quiet prevails and that pupils are apparently busy at work. I can now picture such a scene with the pupils shuffling noisily in. The teacher's main concern at the opening of the period is to subdue the room to a state of quiet so that study is possible. He then watches the pupils, relentlessly goading into activity those who seem slow in getting started. "Open your books and get down to work." Supervision of study hall usually amounts to little more than police duty. There must be constant alertness to quell the disturbing element and to maintain the quiet which efficient study demands. Then there is always the problem of pupils who want to work together, or the pupil who has to get an assignment from another pupil or who must borrow paper or pencil. It is the exceptional study hall which is so orderly that its supervisor can settle down to correct papers.

Recently more progressive schools which have a student government organization have found it possible to shift to the pupils themselves the onus for a "well-disciplined" study hall, and this device has resulted in better conditions where tried. It results in better pupil attitude and more important than all pupil responsibility for their own conduct, but does it result in better study?

The supervisor of study in high school should first of all know the pupils in the school. All of the data on the pupils of a school should be available to the study supervisor. Usually such data are available only in the administrative offices and they are used only in an administrative way for pupil placement, guidance, etc. A duplicate set should be in the study hall immedi-

ately available to the study supervisor. There is no more important use of school records than in the promotion of efficient study. What data should the study supervisor have at hand? First, there should be data as to the economic and social status of the pupil's family. A knowledge of the home background is essential if one is to deal intelligently with the study problem. Second, there should be complete data as to previous school history. This should include records of school attended with dates, attendance and school progress. This should also include complete records of marks and the results of standardized tests. Third, there should be records of the results of recent intelligence and aptitude or prognosis test scores. These are important if the supervisor is to gauge intelligently the quality of the present study of pupils in comparison with what is expected of them. If intelligence test data are not current, but are two or three years old, estimates should be made which bring the intelligence scores down to date. Fourth, the study supervisor should have all of the current marks and achievement test results. It is customary to turn in to the office monthly marks in many schools. The place for these marks is in the hands of the study supervisor and he should have them as soon as they are available. These are all the more valuable if they are the results of standardized tests. Fifth, and lastly, the study hall supervisor should have the "studiousness index"[1] of each pupil. This is a measure of the achievement of a pupil in relation to his ability as shown by an intelligence test. This unit enables the study supervisor to make rather accurate estimates of the needs of the pupils of the school.

An important principle that should govern the work of the study supervisor is that *help and encouragement should be given to those pupils who need it most.* This is not to be interpreted that the study supervisor should help mainly failing pupils. In general *there is little relation between a pupil's* PASSING OR FAILING *and whether or not he needs help or encouragement in study.* The study supervisor should *give assistance mainly* to pupils with the *lowest studiousness index* or the *lowest accomplishment ratio.* This places quite a different complexion on the type of help which a study supervisor should give. Investigations have shown that the correlation between ability and studiousness is low, negligible or even negative. The correlation for a group of fifty-two high school seniors between an intelligence test and the studiousness index was $-.56$. This is partly spurious, as the intelligence scores were used in computing the studiousness index. For the same group the correlations between intelligence and teachers' ratings of studiousness was .30, which is too high since teachers in rating studiousness tend to mix with it general ability. In another school the correlation on eighty cases between intelligence and teachers' ratings in studiousness was .017. It would seem that the true correlation between intelligence and studiousness is zero or slightly negative. This being the case the study supervisor should tend to give aid to the brighter pupils, although brightness is probably no indication whatever as to a pupil's need for help. At least it is quite certain that the help and encouragement should not be given to failures merely because they were failing. Other pupils may need help much more.

The study supervisor should be entirely free from disciplinary concerns so that he can devote his entire energy to the task of directing study. If the student body can be so organized that it can take over the control of study hall, well and good. Otherwise the study supervisor should have no more responsibility with disciplinary matters than any teacher. It should be emphatically understood that study hall is a

[1] See Symonds, P. M., "Measurement in Secondary Education," p. 522 ff.

privilege and that only those are admitted who are willing to profit by the advantages offered of studying under guidance. The study supervisor should have the same means of handling antisocial non-cooperating pupils that the classroom teacher has. If there must be a segregation of the antisocial, let it be a special detention room with police or military discipline and with no disguise in the situation. But under no condition should the detention of the mischief maker be confused with the supervision of study. Pupils who do not appreciate the advantages of study hall should be excused and sent to a place where there is no pretense at supervision.

The study supervisor should systematically attempt to strengthen the study habits of pupils with low "studiousness indices." This means first a thorough study of the conditions affecting the study of each of these pupils from the available records, conferences with parents, conferences with teachers and conferences with the pupils themselves. The study supervisor should administer special tests to these pupils to determine their reading habits, their ability to outline, to skim, to review, to use the library, etc. A questionnaire should be filled out by these pupils which will not only give the study supervisor information as to the study habits and attitudes of the pupil, but will also make the pupil more aware of some of the factors conditioning his success.

Then the study supervisor should sit down with the pupil and make out a daily and weekly schedule with him and discuss with him the need for earnestness and regularity. The study supervisor should see that this schedule is followed out while the pupil is under his charge.

The study supervisor should next note the methods employed by these pupils in their study in particular subjects. He should note by observation whether the pupil brings to study hall his text-books, note-books, paper, pen, pencil, erasers and other tools and equipment necessary for the prosecution of his tasks. He should note the conditions of these materials and see that note-books are well kept, that pens and pencils are ready for use. He should note the use made of these materials and whether the skill with them seems adequate. He should note whether the attack on a task is efficient and business-like or whether it is desultory and inefficient. He should note especially whether the pupil has the assignment properly noted and that it is at hand. Finally, he should note whether the pupil uses approved methods in his work. It is suggested that this observation be routinized and as thorough as possible and that recommendations be given to the pupil in writing in a dignified form, as though they were prescriptions rather than as exhortations or nags to be given opportunistically when observed. The study supervisor should consider himself as a physician or clinician whose duty it is to diagnose and prescribe.

Under no conditions should the study supervisor make it his task to tutor the pupil. By tutoring here is meant helping the pupil with details of his work. That is a matter of adjustment between the pupil and his classroom teacher. The duty of the supervisor of study is to see that pupils use good study methods and that they are being trained toward independence in their work. So often supervised study means hearing a pupil translate, telling him where he is wrong in a problem, giving a clue as to how to proceed, or even telling a pupil what to do. If the pupil really needs that sort of help it is an indication that the classroom preparation for study is inadequate, or that the pupil is improperly classified. The supervisor of study should note the need for this kind of assistance but it is not his province to offer that kind of help while acting as director of study.

This leads to the last office of the super-

visor of study, which is to confer with teachers and advise them concerning the effectiveness of their assignments. The supervisor of study should be given authority to act as a general supervisor over the other teachers in the school. Where several pupils seem to have difficulty with the assignments of a certain teacher the supervisor of study should confer with that teacher and indicate how the assignments could be made more analytic. The supervisor of study could also indicate how assignments could be individualized. Some pupils may need assignments which are more analytic and which offer many more clues to guide the study activity. Probably the majority of those who need help are those for whom there should be supplementary assignments, not of more exercises of the same kind, but of special reports to bring in, special problems to be solved, etc. The supervisor of study is in a key position to act as a general supervisor. Perhaps in one or more faculty meetings the supervisor of study could outline some of the outstanding needs in making better assignments which could raise the level of teaching of the whole teaching force.

Finally, what should be the qualifications of the supervisor of study? He (or she) should be a capable person with a training equivalent to that of one year of graduate study beyond the bachelor's degree. He should have had high-school teaching experience. He should have a broad academic foundation, so that even though not master of all the subjects taught in school, he should have some familiarity with all of them and should be expert in two or three of them. Most important of all, he should have a thorough training in educational psychology. This should include tests and measurements, individual differences and the psychology of learning. He should have had a course in the art and teaching of how to study and should know thoroughly the conditions favorable to study, and the skills and habits essential to study. Beyond this he should have the enthusiasm, the good humor, the earnestness and the professional spirit which characterizes the successful practitioner in any field.

PERCIVAL M. SYMONDS
TEACHERS COLLEGE,
COLUMBIA UNIVERSITY

EDUCATIONAL EVENTS

BOMBAY UNIVERSITY REFORM

AT the ensuing session of the Bombay Legislative Council the bill for the reconstitution of the Bombay University, as amended by the Select Committee, will, as reported in the London *Times Educational Supplement*, be under consideration. The university, founded like those of Calcutta and Madras seventy years ago, has not as yet undergone changes in constitution conformable to the principles which have been followed in broad outline, though with many local variations, in the new universities set up since the Sadler Commission reported eight years ago.

The present bill is the outcome of recommendations made by the Committee on University Reform, presided over by Sir Chimanlal Setalvad, which reported to the government in the summer of 1925, and of subsequent discussions in the senate. The Minister of Education, Mr. Harilal Desai, describes the bill as providing for the reconstitution of the university so as to make it adequately representative and to bring it into closer association with the industrial, commercial and civic life of the people; to enable it to provide greater facilities for higher education in all branches of learning, including technology, and to undertake on a larger scale than heretofore post-graduate teaching and research, while continuing to exercise due control over the teaching given by affiliated colleges.

Under the bill the senate is to remain the supreme governing body, but its composition is to be modified considerably. The nominated element is to be reduced from four fifths to about one fourth. In order to provide for the representation of all interests the number of fellows will be increased from 100 to about 160. The power of nominating 40 fellows is to be retained by the chancellor, principally to correct

inequalities of representation. There is to be an academic council, consisting of educational experts, to work in collaboration with the syndicate, which will remain the principal executive of the university. It is held that the expansion of the field of university activities will, sooner or later, necessitate the employment of some distinguished administrator-educationist as a whole-time officer of the university. Accordingly provision is made for the appointment of a rector whenever the senate desires to create the office. The school-leaving examination board is being placed by the bill on a statutory footing.

Sir Chimanlal Setalvad, the vice-chancellor, has taken justifiable exception to the statement of the minister of education in the debate on the first reading that the government, owing to its financial liabilities in regard to primary education, is unable to give any help to the reconstituted university. Mr. Harilal Desai added an appeal to the rich citizens of Bombay to come to the help of the university. The vice-chancellor argued, in reply, that it is wholly fallacious to divide education into water-tight compartments, primary, secondary and higher, and to think that it is the duty of the state to use all its available resources first for providing primary education on a proper scale, that the claims of secondary education come next and the claims of higher education still later. He argues that the importance and need of higher education are greater in India than elsewhere; but in view of the illiteracy of the masses it would be difficult to deny that primary instruction is a still more vital necessity.

The Bombay government, unlike the other governments of India, has for many years made no direct grant to the university, though it has received an annual grant of Rs.60,000 from the government of India. In the last Bombay budget, however, provision was made for a grant of Rs.50,000, and it was expected that when the reorganization of the university was undertaken the Bombay government would come in line with the other provinces.

THE ADMINISTRATION OF AN ENGLISH SCHOOL

In order to direct attention to methods in English schools there may be quoted from the *Times Educational Supplement* its report concerning the position arising from the resignation by Mr. S. R. K. Gurner of the headmastership of King Edward VII. School, Sheffield. This was discussed for two hours by the education committee at its meeting on September 26.

The discussion centered on the letter of July 16 last, laying down that heads of secondary schools should refer administrative matters in the first instance to the director of education. Mr. Gurner has stated that his resignation was the direct outcome of this letter, which also led to the post of headmaster of the school being "blacklisted" by the Incorporated Association of Headmasters.

At the outset of the meeting Councillor Minshall, the chairman of the higher education subcommittee, read a letter which he had sent to headmasters and headmistresses in reply to one received from them on September 21. In this communication he stated that the letter of July 16, which the director had written with his full approval, was not intended to bear the interpretation which had been put upon it. "It will," he went on, "be my pleasure and my duty in the future, as it has been in the past, to consult with the head teachers of secondary schools, and I recognize that in these consultations those purely business matters which I have termed 'administrative matters' may be discussed, but for the ordinary transaction of business, and in order that I may have not only the advantage of consultation with the head teachers but also the advantage of consultation with and the experience of our chief officer, I feel bound to request that the official correspondence relating to the administration of the school shall be addressed to the official correspondent recognized by the board of education and by the education committee as being the correspondent of the schools."

The minority on the education committee made a strong effort to obtain the withdrawal of the letter of July 16, and proposed an amendment to that effect, on the ground that it had led to serious consequences and to the serious prejudice of the school.

Councillor Irwin Mitchell, in moving the amendment, urged that as long as the present position lasted there would be very great difficulty in filling Mr. Gurner's place. The Association of Headmasters had declared that no

headmaster in the country would apply for the vacant position with their authority. He attached the greatest importance to the status of the school. In what position would the ex-students be when they came to apply for posts for which a public school training was essential? Unless the letter was withdrawn the ban on the school would not be removed. If the status of the school was not maintained parents would find themselves compelled to make other arrangements for the education of their sons.

The Rev. H. Cecil contended that a great part of the responsibility for the present situation rested upon Mr. Gurner for resigning from the headmasters' conference and forcing the issue with an outside body, when he might have inquired what the real meaning of the letter of July 16 was.

Councillor Minshall said his first intimation of any irritation having been caused by the letter came on August 1, when Mr. Gurner tendered his resignation. He regretted that a misinterpretation should have led to this unfortunate position, and that Mr. Gurner did not ask him what the letter really did mean. With regard to the threat of boycott Mr. Minshall said that, if his latest letter was accepted by the other headmasters and headmistresses in the city, he had the right to expect that it would be accepted also by the Association of Headmasters and the Headmasters' Conference.

The amendment was defeated by 17 votes to 11.

THE CASA ITALIANA AT COLUMBIA UNIVERSITY

THE Casa Italiana, Columbia University's center of Italian culture, which was built by contributions of Americans of Italian origin, amounting to $315,000, was formally presented to the university on October 12, at exercises held in the auditorium of the building, and was received by President Nicholas Murray Butler as an institution which would not only promote Italian culture in this country but also foster good-will between the United States and Italy.

The speakers included in addition to President Butler Senator Gugliemo Marconi, special representative of the Italian government; former Judge John J. Freschi, first chairman of the National Executive Committee of the Institute of Italian Culture in the United States, who raised most of the funds for the construction of the building; Anthony Campagna, Joseph E. Paterno and Michael E. Paterno, members of the building committee and large contributors to the building fund, and Dino Bigongiari, professor of Italian at Columbia.

At the opening ceremony, Mr. Campagna, a builder, who had already been named as the donor of $25,000 besides having given much time in supervising the construction, announced that he would present his share of the $135,000 advanced by himself, Joseph and Michael Paterno toward the cost of construction.

Messages were read from Premier Mussolini; Henry P. Fletcher, United States Ambassador to Rome; Nobile Cav. Giacomo De Martino, Italian Ambassador to the United States; General Umberto Nobile, who presented to the Casa a chart by which he flew in the *Norge* over the North Pole, and from Conte Alberto Marchetti, Chargé d'Affaires, Royal Italian Embassy.

THE HONOR PLAN AT CORNELL UNIVERSITY

THE Cornell University faculty has approved a resolution adopted by the faculty of the College of Arts and Sciences, authorizing the formation of a joint Faculty-Student Committee to determine matters of policy relating to the conduct of examinations, and to dispose of cases of dishonesty and disorder when reported. The resolution reads:

> The faculty and students of the College of Arts and Sciences recommend that all academic work be conducted on the assumption of general honor and good behavior. The presence or absence of members of the faculty at examinations shall in no way modify the obligations of personal honor.
>
> For the purpose of bringing to the attention of both faculty and students the general policy herein adopted and of considering other related matters of general policy, and for hearing and disposing of cases of dishonesty and disorder in courses conducted by the arts and science, a joint committee with equal representation of faculty members and students shall be constituted. To this committee, it shall be the duty of the members of the faculty and of members of the student body to report ob-

served cases of fraud and offenses against good order.

The committee shall consist of twelve members, with the dean as chairman. The six members of the faculty will include the secretary of the college, who will be the secretary of the committee, and five other members appointed by the dean for three years each in rotating groups of two, two and one. The student group consists of one sophomore, two juniors and three seniors, one junior member and one senior to be women. The present College Honor Committee, composed of five members, with one sophomore member to be nominated by them with the approval of the dean, will constitute the original student representation on the joint committee.

THE BUREAU OF SCHOOL SERVICE OF THE UNIVERSITY OF KENTUCKY

THE Board of Trustees of the University of Kentucky has authorized the establishment of a bureau of school service in the college of education. It has been the purpose of the college of education since its organization to be of the largest possible service to the schools of the state, both public and private. The establishment of this new bureau will enable the university to render a service to education that has not been possible previously. Dr. Floyd W. Reeves has been appointed director of the service. The following statement outlines briefly the types of work to be undertaken and the personnel of the new organization:

I. Types of services to be rendered:
  A. School surveys
    1. Complete surveys, including every phase of the school system
    2. Partial surveys on particular phases of the school organization, such as:
      a. Building surveys
      b. Finance surveys
      c. Surveys of efficiency of instruction
      d. Surveys of administrative organization
      e. Surveys of curricula
  B. Educational counseling—a service of advice to school administrators with respect to particular problems in their local system
  C. Cooperative research—the direction of groups of school executives who are working cooperatively on the solution of a problem demanding research technique

II. Types of schools to which service will be available:
  A. The public schools of Kentucky
    1. County systems
    2. City systems
    3. Independent graded districts
  B. The private and parochial schools of Kentucky
  C. Collegiate institutions of Kentucky

III. The personnel of the bureau:

Dr. Floyd W. Reeves, director, rural school teacher, elementary school principal, superintendent of schools, college teacher, with a wide experience in making and directing educational studies and school surveys

Dr. Jesse E. Adams, rural school teacher, elementary school principal, high school teacher, county superintendent of schools, college teacher, with experience in college administration

Dr. Clay C. Ross, rural school teacher, high school teacher, high school principal, college teacher, with experience in research organizations

Professor Dale Russell, assistant to dean of the School of Education, University of Indiana; director of statistics and educational reference, Department of Public Instruction, Indiana; director of research and assistant professor of education, Ball Teachers College; director, rural school survey, Indiana; Dr. Russell also participated in survey of higher education, Indiana

THE FIELD MUSEUM AND THE CHICAGO SCHOOLS

THE scope of the work of the extension lecturers sent out into the schools of Chicago by the Field Museum of Natural History has been broadened to include the high schools, as well as the elementary and junior high schools, according to a statement made by D. C. Davis, director of the museum.

The staff of lecturers has been enlarged, a greater variety of subjects is being offered and more children than ever before will be reached. The sending of lecturers, with lantern slides to illustrate their talks on natural history, economic and historical subjects, is carried on under the provisions of the James Nelson and Anna Louise Raymond Public School and Children's Lecture Fund of the museum.

This widening of the lectures, together with children's moving-picture programs given at the museum on Saturday mornings, also under the Raymond endowment, and the continuance of

the work of the N. W. Harris Public School Extension of Field Museum in sending out cases containing animals, birds, plants, minerals and other natural history and economic specimens for exhibition in all schools, will make the contribution of the museum to education of children greater in the school year 1927–28 than in any preceding year. Practically every child in the Chicago public school system will be reached by these various activities, the majority several times during the year.

Following is a list of the subjects for school lectures: "North American Indians," "What We Owe to South America," "Coffee, Chocolate and Tea," "Flax and Cotton," "African Animals," "Glimpses of Chinese Life," "The Story of Coal and Iron," "Food Fish of the World," "Roman Home Life," "Silk and Wool," "The Life of the Ancient Egyptians," "Native Life in the Philippines," "Activities of Field Museum," "Mammals of the Chicago Area," "Birds of the Chicago Area," "Fish of the Chicago Area" and "North American Mammals." An additional lecture, "The Story of Steel," illustrated by moving pictures, is offered for the junior high and high schools only.

Lecturers are sent out to the schools on request of the principals. With the cooperation of the Chicago Board of Education, the lectures and other educational activities of the museum have been correlated with the curriculums prescribed for the schools.

THE ANNUAL REPORT OF THE MASSACHUSETTS DEPARTMENT OF EDUCATION

THE annual report of the Massachusetts Department of Education lays special stress on the necessity for higher standards for admission to teacher-training institutions and formulation of a program seeking to remove the handicap which faces non-English-speaking children.

Largely brought about by a campaign conducted a few years ago to interest larger numbers of qualified persons to prepare themselves for teaching, enrolment in the normal schools of Massachusetts increased to such an extent that in certain schools there are many more applicants for admission than can be accommodated. This has resulted in necessarily raising standards for admission.

With regard to a study of the school progress of children who were unable to speak English upon their initial entrance to school the report says:

> The general inference to be drawn from the inquiry is that non-English-speaking children who are good students are able to complete the elementary course in the normal time of eight years. The policy that appears to obtain in some school systems with reference to these children, based upon the assumption that all of them require at least one additional year to complete the elementary school course, seems to be unjustifiable in the light of this inquiry.
>
> From a description of the plans in use in various towns and cities to meet the special needs of the non-English-speaking children, it is clear that there is no school program for such children that has been generally approved and adopted. Although good results are doubtless being secured under many different plans, the situation evidently calls for a more careful examination and study and the formulation of an educational program based upon such investigation.

THE STANDARDIZATION OF RURAL SCHOOLS

THIRTY-ONE state departments of education are, at the present time, promoting standardization of rural schools, either by authority of the statutes or by rules and regulations of their chief executive school heads, according to information given out by the Bureau of Education. In a few other states county superintendents promote a plan of standardization within their respective counties.

In some of the thirty-one states standardization applies particularly to small rural schools, especially those of the one-teacher type. In others it includes all rural schools—graded and consolidated, as well as ungraded. It is, however, with the improvement of the small rural schools, particularly those where consolidation is not yet feasible, that standardization is most concerned.

Among the important requirements relating to standardization of rural schools that have been written into the statutes or adopted by regulations of state school executive heads are:

(1) The school site should be well drained, level,

fertile, and should contain at least two acres of ground.

(2) The school building should comply with accepted standards relating to number of rooms and their dimensions, color scheme for walls and ceilings, replacement of glass area of windows, heating and ventilation and amount and kind of equipment.

(3) The minimum scholastic preparation of the teacher should be completion of four years of high school, plus a two-year normal course and two years of successful experience.

(4) The school term should be nine months; the average daily attendance at least 90 per cent. of the enrolment and the enrolment 90 per cent. of the educables of the district; there should be a well-planned daily program, and the state course of study should be followed.

THE NEW SALARY SCHEDULE FOR NEW YORK CITY TEACHERS

George J. Ryan, president of the New York City Board of Education, has submitted to the Board of Estimate the schedule of increases for public school teachers for which the Board of Estimate has been waiting before releasing the $14,000,000 designated for that purpose in the new budget.

It is expected that the fund will be released and that the new schedules will become effective on January 1. The recommendations of the Board of Education follow generally those made by the joint committee appointed by the Mayor and the president of the Board of Education.

For senior teachers the board's rates are somewhat higher than the committee's. Although teachers in the lower grades would not get quite as much money under the board's plan as under that of the committee, the former would enable them to get increases almost as great as those under the committee's plan without the necessity of applying themselves intensively to academic work to acquire the degrees for which the Mayor's committee intended to grant larger salaries.

It is pointed out in a supplementary memorandum submitted by the Board of Education that the value of a bachelor's degree to a teacher in kindergarten or grades below the seventh is somewhat problematical. The board states that it sees no necessity for rewarding particularly the holder of a degree in chemistry, for instance, who prefers to remain a teacher in one of the lower grades rather than to utilize her special knowledge as a high-school teacher.

Many teachers are called upon for supplementary work outside of the classroom, revising courses of study, preparing syllabi and doing similar work. Time consumed in such directions, it is suggested, should, "within reasonable limits," be regarded as laboratory work in the educational field and entitle the teacher to credits equivalent to the corresponding amount of work devoted to getting a degree.

The Mayor's committee proposed a "super-maximum" of $4,092 for teachers in the 6B grade and below, while the board would make the corresponding figure $3,504. Teachers in this category who are assigned as senior teachers would get $3,654 as a super-maximum, as compared to the committee's $4,092.

Junior high school teachers whom the Mayor's committee would have paid $4,092 as a "super-maximum" would receive $4,200 as top pay. Teachers in the seventh and eighth grades, who also would have been paid $4,092 as the "super-maximum," would get $3,900, unless assigned as senior teachers, when they would get $4,350.

The board recommends top pay of $4,200 for teachers of vocational subjects; the recommendation of the committee was $4,092.

Assistants to principals of day elementary schools would get from $3,600 to $4,620, according to length of service, under either plan. Teachers in charge of truant and probationary schools, to whom the committee had allotted salaries ranging from $3,600 to $4,620, would get from $3,900 to $4,920, according to the schedule of the Board of Education.

Principals of elementary schools with from twenty-five to forty-eight classes and of practice schools with from eighteen to forty-eight classes, would get from $5,000 to $6,000 under either plan, but under the plan of the Board of Education their increase would be spread over five years instead of three.

Principals of junior high schools, schools for the deaf and crippled, probationary schools and elementary schools with from forty-nine to eighty-four classes would get from $5,500 to $6,500 under the committee's plan, the increase being apportioned over three years. The salary suggested by the Board of Education has the same range, but is extended through five years.

EDUCATIONAL NOTES AND NEWS

DR. ERNEST HATCH WILKINS, professor of Romance languages at the University of Chicago and dean of the Colleges of Arts, Literature and Science from 1923–26, will be inaugurated as president of Oberlin College on October 24. Dr. Wilkins succeeds Dr. Henry Churchill King, now president-emeritus.

THE inauguration of Charles Joseph Turck as president of Centre College at Danville, Kentucky, took place on October 21. The principal speakers were Dr. William McF. Alexander, of New Orleans, Louisiana; President Frank L. McVey, of Lexington, Kentucky, and Dr. Edgar Whitaker Work, of New York City.

PROFESSOR CHARLES SEYMOUR, Sterling professor of history at Yale University and chairman of the department of history, has been appointed provost, to succeed Dean Henry S. Graves, of the school of forestry, who resigned last June. Professor Seymour will assume his duties as provost at the beginning of the second term in February, 1928.

BURT BROWN BARKER has been elected vice-president of the University of Oregon, in charge of public relations. Mr. Barker, an attorney of Chicago and New York, has been associated with various movements for the improvement of the bar and in public service. One of his principal responsibilities at the University of Oregon will be the development of income from gifts.

DR. MARK A. MAY, professor of psychology at Syracuse University, who has had leave of absence for the past three years to carry on research work at Columbia University, has been appointed head of the department of educational psychology at Yale University.

THREE John W. Sterling professorships have been awarded at Yale University as follows: Dr. Richard S. Lull, professor of paleontology and director of the Peabody Museum, in paleontology; Dr. Ross G. Harrison, professor of comparative anatomy and director of the Osborn Zoological Laboratory, in biology, and Dr. Francis G. Blake, now Ely professor of medicine, in medicine.

AT the University of California at Los Angeles, Dr. Frank Thilly, formerly dean of the graduate department of Cornell University, has been appointed lecturer in philosophy.

DR. J. G. SCHURMAN, formerly president of Cornell University, received the honorary degree of doctor of philosophy from the University of Marburg at the recent celebration of its fourth centenary, in recognition of his work of ambassador "as mediator between German and American culture."

DR. JOHN RUSSELL WHITEHEAD, dean of the school of engineering of the Johns Hopkins University, recently returned from France where, during the past academic year, he has been exchange professor in engineering and applied science. He lectured in the universities at Aix-Marseille, Grenoble, Lyon, Bordeaux, Toulouse, Caen, Lille, Strasbourg, Nancy and Paris. Dr. Whitehead received a medal of honor from the University of Nancy.

FOR his services as the head of a mission of American experts in finance and economics which advised the Polish government on reconstruction, Professor Edwin W. Kemmerer, of Princeton University, has been invested with the Knight Commander's Cross with Stars of the Order of Polonia Restituta.

PROFESSOR FOREST RAY MOULTON, director of the department of astronomy of the University of Chicago, has resigned to become associated with the Utilities Power and Light Corporation of that city. Dr. Moulton is a member of the National Academy of Sciences and a fellow of the Royal Astronomical Society of England.

THE REVEREND ROYAL CLYDE AGNE, assistant pastor and director of religious education of the Old Stone Presbyterian Church of Cleveland, Ohio, has been elected president of Huron College, South Dakota.

THE development of Claremont Colleges has reached a point where there is needed the full time of President James A. Blaisdell, of Pomona College. An executive committee has therefore been formed to relieve him of the administrative duties pertaining to Pomona College. On October 16, following the formal opening of Scripps College, President Blaisdell left for the east on business connected with Claremont Colleges. The executive committee which will administer the affairs of Pomona College is

composed of Dr. Frank P. Brackett, chairman and acting head of the college, who has been connected with the college for forty years; Dr. Raymond C. Brooks, Dean William E. Nicholl, and Dr. George S. Burgess, secretary of the faculty.

George A. Selke, who has been county and city superintendent in the schools of Minnesota, has taken up his work as president of the St. Cloud Teachers College. He succeeds Dr. T. C. Brown, who has become president of the DeKalb, Illinois, Teachers College.

Douglas Walter Ross, the English actor, who has specialized in Shakespeare and in classical comedies, has been appointed director of the Yale University Dramatic Association for the coming school year. He succeeds Edgar M. Woolley, who resigned last spring to accept a position in Boston.

Dr. Bruce Curry, of the Union Theological Seminary of New York, has been appointed to act for one year as professor of New Testament language and literature at Oberlin College, taking the place left vacant by Dr. Edward I. Bosworth, who died in July.

John G. Mitchell, president of State Teachers College, Edmond, Oklahoma, and State National Education Association director, was recently presented by the faculty with a life membership in the association.

At the recent meeting in Rochester of the Associated School Boards and Trustees of the State of New York, H. D. Fearon, of Oneida, was reelected *president*. Other officers reelected were: George H. Faulkner, of Oswego; Mrs. Edwina Danforth, of Rochester, and R. S. Jewett, *vice-presidents;* Mrs. E. L. Robertson, of Syracuse, *secretary,* and R. A. Searing, of Rochester, *treasurer.*

Dr. Arthur H. Wilde, dean of the school of education of Boston University, has been made a director of the newly-formed National Commercial Teacher Training Association, which has been established for the purpose of standardizing and elevating the training of teachers of commercial subjects.

Several changes in the staff of the New York State Education Department have taken place. These include the appointment of William G. Kimmel as supervisor of social studies; Clarence E. Baer as supervisor of science, and Helen H. Heyl as assistant in the rural education bureau, and the resignation of Edwin B. Richards as supervisor of English. Dr. Lewis A. Wilson, who has been director of the vocational and extension education division, has become assistant commissioner for vocational and extension education.

John R. Bowman has been elected supervisor of physical education in the secondary schools of Baltimore, Maryland. This places him in charge of the teachers of physical education and all coaches of athletics in six senior high schools, four technical high schools and sixteen junior high schools, comprising a teaching staff of about ninety men and women.

C. L. Brownell has been appointed state supervisor of physical education for the state of Ohio.

Miss Jane Louise Jones, who during the past year has been exchange instructor in the School of Education, Edinburgh, Scotland, has been appointed dean of the Junior College of the Katherine Gibbs School, Boston, Mass.

Miss M. Blackett, of the National Institute of Industrial Psychology, London, has been awarded a Laura Spelman Rockefeller memorial fellowship. Miss Blackett plans to spend a year in the study of psychology in the United States.

Dean L. John Nuttall, professor of educational administration and acting president of Brigham Young University during 1926–27, ex-president of the Utah Education Association, has resigned, to take up graduate work in Columbia University.

On November 14 and 15 Dr. Joseph Jastrow, of the University of Wisconsin, will give two lectures on psychology at Columbia University. On November 21 a lecture will be given on the mentality of apes and man by Dr. Stanley Cope, of England. It is also announced that Professor H. A. Overstreet, of the College of the City of New York, will deliver four lectures on psychology for adults.

Dr. Arthur J. Roberts, president of Colby

College, at Waterville, Me., died on October 11, aged sixty years.

PROFESSOR AZARIAH SMITH ROOT, for forty years librarian of Oberlin College, died on October 2, at the age of sixty-five years.

A MONUMENT to the late Andrew Dickson White, first president of Cornell University, will be erected in Sage Chapel and a portrait by Truman Fassett, presented by Mrs. White, will be hung in Prudence Risley Dining Hall.

MEMORIAL services in honor of President-emeritus Benjamin Ide Wheeler, for twenty years administrative head of the University of California, and for almost thirty years the most revered figure connected with the institution, who died on May 2, were held simultaneously on the various campuses of the university on October 3. President W. W. Campbell presided over the meeting at Berkeley, with former President David P. Barrows, now chairman of the department of political science; Regent Ralph P. Merritt; Dean of Women Lucy W. Stebbins; Herman H. Pleger, alumnus, and Louis Heilbron, an undergraduate student, as speakers. Dr. Ernest C. Moore, director of the University of California at Los Angeles, presided over the services in the South, and Dr. Charles H. Rieber, dean of the college of letters and science, spoke to the students.

RESOLUTIONS in honor of the late Edward W. Stitt, associate superintendent of the New York Public Schools, were proposed at a recent meeting of the board of directors of the New York Academy of Public Education. The resolutions adopted read in part: "On July 16 the membership of the academy suffered a severe loss in the sudden death of Dr. Edward Walmsley Stitt. As one of its founders and as a former director and president, Dr. Stitt was one of the most active and faithful members of the academy since its organization. In organizing the academy he cooperated with principals, superintendents and members of the faculties of Hunter College and the College of the City of New York for the promotion of the system of public education in New York City. As in his official work, so in his personal relations with our members and officers he impressed all with his energy, his gentlemanly bearing and his kind consideration. His passing leaves the loving memory of a gentleman, a scholar and a teacher."

IT is reported in the daily press that, after hearing complaints of five student leaders against the administration of Dr. Spright Dowell, president of Alabama Polytechnic Institute, at Auburn, Governor Bibb Graves has appointed five members of the college board of trustees to investigate conditions and report to him on October 28. The governor presided at a meeting of the board called to consider the students' protest. Charges that Dr. Dowell "failed to keep up with the human side of student life," that discipline is lacking and that the Alabama institute is the only Class A college in the South where enrolment in the freshman class has shown a material decrease were made. Tribute was paid to Dr. Dowell for his development of the "business side of the college during his seven years in office," but the students felt that he had lost personal contact with them.

APPLICATIONS for assistant educationist (foreign education) in the U. S. Bureau of Education must be on file with the Civil Service Commission at Washington, D. C., not later than November 15. The entrance salary is $2,400 a year. A probationary period of six months is required; advancement after that depends upon individual efficiency, increased usefulness and the occurrence of vacancies in higher positions. The work includes the collection and compilation of information about Slavonic and Germanic school systems and research work on comparative courses of study.

A DELEGATION from Spain, under the auspices of the Rockefeller Foundation, has arrived in the United States to make a study of American universities, in view of the establishment of a government college in Madrid, on which it is planned to spend $6,750,000. The delegation will visit Harvard, Yale, Michigan, Chicago, the Johns Hopkins and Rochester Universities.

THE new dormitory of the International Y. M. C. A. College at Springfield, Massachusetts, known as Alumni Hall, was opened in connection with the meeting of the trustees of the college on October 14. The building will accommodate more than 250 students and forms a needed addition to the college plant. William

Orr, newly appointed financial secretary, whose work is to raise money for the branch of the college just opened in Switzerland, was the chief speaker. President L. L. Doggett reported that $2,044,000 of the $2,250,000 endowment and expansion fund had been raised. There remains outstanding $180,000 pledged by alumni, which must be brought in to enable the realization of conditional gifts.

By the will of James M. Cutler, formerly mayor of the city of Rochester, New York, the University of Rochester receives property valued at $2,407,151.

The Johns Hopkins University and the Peabody Institute will each receive, eventually, half of the residue of the $500,000 estate of the late James Swan Frick.

A fund of $125,000 or more for the endowment of a professorship of medieval history and $10,000 for the maintenance of the Henry Charles Lea Library are to be received by the University of Pennsylvania from the estate of Miss Nina Lea. If Miss Lea's residuary estate after the library fund is deducted is less than $125,000 it is to be invested until it reaches that sum under the terms of the will. If it exceeds $300,000 the excess is to go to Harvard University for establishment of a scholarship.

Mrs. Gertrude Dunn Hicks has given to the University of Chicago the sum of $300,000 for the purpose of erecting and equipping a building to be known as "The Gertrude Dunn Hicks Memorial" to be constructed and operated by the university as an orthopedic hospital. In so far as it may seem practicable to do so, preference is to be given in the admission of patients to poor children who are unable to pay for the treatment received.

By the will of Annie Downing Willson, of Cambridge, the sum of $150,000 is left in trust as an endowment fund, the income of which is to be used to maintain a professorship at Harvard University to be known as the Robert Wheeler Willson professorship of applied astronomy. If the income is more than enough for this purpose the balance is to be used for the upkeep of a laboratory.

An anonymous gift of $250,000 for a building and an annual income of $50,000 has been provided for the College of Preachers of the Washington Cathedral, an institution not designed to compete in any way with theological schools or seminaries, but as a post-graduate school for men already ordained in the ministry.

Establishment of a school of arts and trades and college of engineering at Valparaiso, Chile, at a cost of more than $4,000,000, is assured under the will of the late Don Frederico Santa Maria Carrera. The school will bear the name of an early Chilean patriot, José Miguel Carrera, and will be conducted along modern lines. A site has been acquired, and tentative plans for buildings decided upon. It is desired to incorporate in the new school the highest achievements in the arrangement of classrooms and construction of buildings, and to this end a committee of Chilean architects and engineers will visit a number of the best vocational and engineering schools in the United States. For the first ten years all teachers will be selected from Europe and the United States, and it is probable that for some years thereafter a large number of the faculty will be drawn from abroad. Provision is made for scholarships to enable specially qualified graduates to study in foreign countries, particularly in the United States.

At a meeting held last April at the University of North Carolina, the American Alumni Council was formed under the presidency of Wilfred B. Shaw, as a consolidation of three existing intercollegiate alumni organizations: the Association of Alumni Secretaries, Alumni Magazines, Inc., and the Association of Alumni Funds. The new organization will meet for its next convention at the University of Minnesota on May 3, 4 and 5. The council has been divided into nine divisions covering different sections of the United States and each district holding local meetings during the year.

American Education Week will be observed from November 7 to 13. The following program for the week has been outlined: Monday, November 7—Health Day; Tuesday, November 8—Home and School Day; Wednesday, November 9—Know Your School Day; Thursday, November 10—School Opportunity Day; Friday, November 11—Armistice Day; Saturday, Novem-

ber 12—Community Day; Sunday, November 13—For God and Country Day.

ACCORDING to a report issued by the research division of the National Education Association, the average salary paid to educators throughout the United States is $1,275 a year, while average earnings of workers in 25 representative manufacturing industries is $1,309. Trade union members receive an average yearly wage of $2,502, according to the statistics, while high-grade clerical workers receive $1,908, routine clerical workers employed by the government, $1,200, and United States Government employees an average of $1,809. Teachers received an average salary of $525 in 1914, according to the report, compared with $836 which was the average wage of all then gainfully employed throughout the country. The current statistics show that while the average for teachers is now $1,275, the average for all gainfully employed in the United States is $2,010.

SPECIAL CORRESPONDENCE

AGES OF THE PENNSYLVANIA STATE COLLEGE STUDENTS

DURING the first semester of the academic year of 1926–27 a distribution according to ages of candidates for the bachelor's degree was made for the first time, although it has always been the practice to keep a record of the date of birth of regular students. If eighteen be regarded as the normal age for freshmen, nineteen for sophomores and so on, then in each of the four classes the largest group occurred at the normal age for the class; except in the freshman class, where the median age occurred in the group one year older. The oldest student in college was a sophomore in the School of Education, and the youngest a freshman in the same school, the difference in the ages of these two persons, who expect to receive their degrees within a year of each other, being 31 years. A tabular distribution follows:

Year of Birth	Sr.	Jr.	So.	Fr.	Total
1880			1		1
1881	1				1
1887		1			1
1888	1	2			3
1890	1	1	1		3
1891	2		1		3
1893	1				1
1894		1	1		2
1895	1	1			2
1896	2	2	1		5
1897		2		1	3
1898	4	4	4		12
1899	10	3	2		15
1900	13	8	3	3	27
1901	19	15	12	3	49
1902	49	26	21	3	99
1903	81	48	24	8	161
1904	*126	124	55	31	336
1905	160	*204	129	45	538
1906	74	239	*205	129	647
1907	14	105	305	254	678
1908	1	12	130	*388	531
1909	1	2	15	126	144
1910			3	17	20
1911				1	1
					3283

Underscored—largest group.
* Median age for class.

WM. S. HOFFMAN

DISCUSSION

IMPROVING TEACHERS IN SERVICE

THE late Dr. John M. Milne, for many years principal of the Geneseo State Normal School, used to say that the trouble with far too many teachers was that they considered their diplomas not as an introduction to learning but as a kind of mattress whereon their minds might lie and go into a state of coma, a kind of perpetual siesta.

That was many years ago. If "Dr. John," as he used to be called, could return he would find a changed situation, for it is the fashion now-a-days for teachers by the thousands to continue their studies after graduation. Not to do so, is, in fact, regarded with disfavor by the profession itself. The tens of thousands of teachers attending summer terms and taking extension courses bear eloquent testimony to this mental alertness and sense of responsibility. In teaching, as in all other forms of endeavor, it has come about that promotion seeks only those who are awake and prepared; while the David Swans, the few who are left of that vanishing race, continue to repose upon their intellectual mattresses, only awaking now and then to complain of the world's injustice. Boards of education and superintendents of schools are

thus face to face, not so much with the problem of spurring on unwilling workers, as with that of providing opportunity for a growing body of ambitious and progressive teachers and of properly rewarding those who take advantage of the opportunities provided.

Any adequate plan for the improvement of teachers in service should provide both opportunity and reward—opportunity for the non-college trained teacher to begin and pursue a college course, opportunity for the college trained to go on with graduate work, and adequate reward for both. From the standpoint of the schools the objective is, of course, improved public service by the building up of a more permanent corps of more and more highly trained and broadly educated teachers. In order to achieve this, recognition should be given only for work of actual college or graduate quality. Summer term and extension courses, while they are to be welcomed if conditions are such as to make them the only possibility, are at best less desirable than are the courses offered by the faculty of a given institution during the regular scholastic year. Whatever plan is adopted for providing for the improvement of teachers in service, it should be definite, carefully worked out in detail, and after adoption by the board of education, it should be published and made available to any interested.

Candidates who wish to profit by such a plan for advancement should be required to register with the superintendent for advanced study, submitting the college courses they wish to take and securing his approval. In the case of undergraduate work, the emphasis should be laid upon basal studies in English, the foreign languages, sciences, mathematics, history, etc. Not more than one fourth of the work should, in my judgment, be professional; and not more than one fourth should, in undergraduate work, be in the subject taught by the candidate. Not only should the courses proposed be scrutinized, but also the institutions offering them. Where institutions, as some of them do, offer courses for degrees so general as to be almost worthless on any sound basis of education, they should be ruthlessly rejected. Not the degree, but the substance back of it is what superintendents are concerned about. Only substantial courses in settled institutions known for their thorough work should be recognized.

Substantial work having been required, substantial recognition should be given. We believe that this can better be done in the form of salary increments for advanced study rather than by any system of bonuses. The difference between an increment and a bonus is, of course, that an increment raises the salary level to be paid annually, while a bonus is in the nature of a prize, paid but once and leaving the salary level unaffected.

After these advanced study increments have been earned and the teacher has been in the service of a given community for the prescribed time, the plan should include a leave of absence for further study and travel on full salary for one semester or on half salary for the full year. If the half year on full salary is chosen, it can, of course, include the two vacation months. The work which teachers on leave propose to take should be submitted for approval before leave is granted. It goes without saying that such salary increments should be paid only upon the return of the teacher to the service of the community which pays the price for such improvement of the service.

F. D. Boynton
Superintendent of Schools,
Ithaca, N. Y.

THE COURSE IN EXPERIMENTAL PSYCHOLOGY

In many colleges the course in experimental psychology is still given more or less as a formal discipline. Before a student can enter any of the more interesting branches of abnormal, animal, educational psychology, and the like, he must have a dose of experimental or "pure" psychology. After he has spent two quarters dealing with the "faculties" of sensation, memory, volition, attention and what not, he can promptly forget the details of what he has learned and proceed to elective courses.

Some such sentiment is behind much of the required laboratory work to-day, and, in the writer's experience, leaves much to be desired. Max Meyer has aptly pointed out how incorrect even the name "experimental psychology" really is when the technique, methods and prior results of a demonstration are given to the student in

an already digested form. It is granted that laboratory work is needed, and that a knowledge of elementary statistics, laboratory controls and procedure is vital to the student who desires to specialize in psychology. But are the traditional experiments and present mode of approach sacred?

Since, during the year 1926–27, the enrolment in experimental psychology at Stanford University had increased to a point where rooms and apparatus were barely adequate, the writer thought it a good time to alter considerably the laboratory course. Foster's "Experiments in Psychology" was required in the first quarter. The course opened with several weeks spent in the mastery of sufficient statistical method to satisfy simple, practical needs. This was followed by the experiments in Foster (and a few others) which did not require many private rooms or numerous pieces of apparatus. Careful and detailed reports were demanded and the understanding and use of laboratory controls and technique were emphasized. This portion of the work occupied three hours an afternoon, three afternoons each week for a full quarter.

At the beginning of the following quarter it was announced that each one, or a pair of students, was to work out an original experiment on a subject of his own choosing or one assigned by the instructor. The students were to serve, as much as possible, as subjects for each other's experiments, and were to work out bibliographies of the previous work on their research subjects. Needless to say, no major problem was solved in so short a time. It likewise goes without much comment that certain students did almost sufficient work for a master's thesis, while a few did only enough to pass the course. The writer is convinced, however, that the majority of the students gained considerably more from the course than they normally would have under the old plan, and were happier and more interested while taking the course. A few, in addition, wish to continue their research problems another quarter.

A list of the problems attacked is appended.

(1) Norms for the Kent Rosanoff Association test by university class and major department.

(2) A comparison of the Kent Rosanoff test and Laird's B2 test.

(3) Correlation between scores on simple visual and serial visual reaction time.

(4) The effect of certain suggestive factors on the Miles ataxiameter.

(5) The comparative legibility of numbers and letters for expressing the same concept.

(6) Preferences for color combinations of unequal sizes.

(7) Memory value of advertisements with different types of borders.

(8) The estimation of time under varying distractions.

(9) Certain problems on an attentional learning board.

(10) The abilities of children on a battery of "mechanical aptitude" tests.

(11) Dyad preferences at varying intensities.

(12) An analysis of sex differences on the George Washington Social Intelligence test.

(13) The relation of Thorndike scores and school grades to the posture of university girls.

(14) The frequency and commonness of association words in the different school years.

(15) An analysis of Laird's C2 test.

(16) Sex differences in conversation in fraternity and sorority houses.

(17) The effect of training in equal temperament on a tonoscope devised to record in just intonation.

(18) The construction and use of a special tachistoscope.

(19) The reliability of testimony.

PAUL R. FARNSWORTH
STANFORD UNIVERSITY

QUOTATIONS

THE SCHOOL-LEAVING AGE IN ENGLAND

As a result of the report of the consultative committee on the education of the adolescent the question of the desirability of prolonging the school life of children has during the last nine months received considerable attention from Parliament, from local education authorities, and from the press. The president of the board of education has expressed his views upon the subject more than once, and on Monday he again defined his attitude towards it in a speech delivered at a luncheon held in connection with the autumn conference of the National Chamber of Trade. It was more effective than some of his previous utterances because free from the

note of irritability—as of a sage plagued by the buzzing of gnats—which has not been wholly absent from some of them. And the considerations advanced in it deserve respectful attention. The reform proposed by those who desire to see the age of compulsory full-time attendance raised to fifteen is, Lord Eustace argued, of no great importance, and in any case it is not one which can be accelerated or retarded by the action of governments. It is not important because the crucial problem is the after-education of the young man and young woman. It does not depend upon the policy of governments because certain conditions must be fulfilled before any action can be taken, and when these conditions are fulfilled the necessary action will follow almost automatically. On the one hand, practical difficulties make it impossible to raise the age of school attendance immediately by a stroke of the pen. On the other hand, the natural course of educational development will lead to its being raised spontaneously in the future. An increasing number of children remain voluntarily at school till nearly fifteen. A large proportion of those who leave at fourteen do not succeed in obtaining regular employment till they are fifteen, since a number of industries do not wish to recruit their juvenile workers below that age. Owing to the fall in the birth rate the necessary accommodation will be available without any very great additional expense. The conclusion is that the reform which is desired will be achieved without difficulty or agitation through the march of events, which political action can neither hasten nor impede. The task of statesmanship, therefore, is not to anticipate the majestic operation of these natural processes by a presumptuous interference which will probably be mischievous and will certainly be futile. It is to observe the new order unfolding within the shell of the old, and to explain to a public which still clings to the exploded illusion of free will at once the impossibility and the danger of inducing it to unfold more quickly.

It is improbable that the president of the board of education has spent his vacation in the study of Karl Marx. But those who are familiar with the works of that philosopher will recognize in his remarks an old acquaintance. It is the theory of economic determinism—economic determinism applied to education and interpreted with a simple and unclouded faith which is rarely found outside those members of the Communist party who are still in the twenties. There is, needless to say, a considerable measure of truth in the educational fatalism of the president, as there is also in the economic fatalism of the orthodox Marxian. It is not the case, indeed, that the lengthening of education in childhood is unimportant compared with the after-education of young men and women, as he seemed (if correctly reported) to suggest. On the contrary, those who have most experience of educational work among adults are precisely those who are more impressed by the injury, sometimes the irreparable injury, caused by the abrupt termination of school life at fourteen. But it is perfectly true that, quite apart from the policy of the government—and indeed in spite of its financial policy—there is a growing tendency for parents to keep their children at school voluntarily beyond the age at which attendance ceases to be compulsory, and that the decline in the birth rate makes it easier for local education authorities to find accommodation for them.

These developments are important and deserve the emphasis which Lord Eustace laid upon them. But do they mean that we can fold our hands and wait for the immanent logic of events to produce its result without the assistance of forethought and organization? Alas, the web of human affairs is not so simple! The president has shown by his action in other connections that he believes that educational evolution may at any rate be delayed, for he has been at some pains to impress on local education authorities the need for economy. But if it may be delayed, may it not also be accelerated? Is it not conceivable that it may be desirable for the official head of the educational system to do his best to accelerate it? And is it really the best way of preparing even for the more inevitable of changes to declare that no preparation is necessary since the change will come about whether preparations are made for it or not? The consultative committee at least thought otherwise. It stated that "if the preparations require some considerable time for their

completion it is all the more important that they should be begun as soon as possible."—*The Manchester Guardian.*

LORD EUSTACE PERCY has been wise to restate his position and that of the government in the matter of the school-leaving age. When the report of the consultative committee of the board of education on the training of adolescents was issued some months ago, the president published simultaneously a statement that the government was not prepared to act upon the committee's principal recommendation—namely, that the school-leaving age should be raised to fifteen by legislation to take effect in five years' time. At once an outcry arose, and the government was accused of stultifying the work of the committee. This outcry was, as a matter of fact, beside the mark. Lord Eustace Percy's *caveat* may have been unhappily worded—it was certainly ill-timed; but it merely stated the actual position as left by recent legislation. To raise the school age before the necessary preparations have been made in the schools would inevitably lead to chaos. Under the present law, therefore, local authorities have to satisfy the board that they have made provision for the additional pupils both in the supply of "school places" and in increased staff, and that the ratepayers are prepared to play their part. If the board approves the scheme and is satisfied that it will work, then its simple duty is to signify its consent. That such consent is not unreasonably withheld is shown in the case of Plymouth, where the school age has in fact been increased to fifteen. This is the logical and necessary procedure, and the only plan possible in the present state of public opinion. To put up the age throughout the country by legislation, either at once or at an early date, would be in advance of public opinion, and in many parts of England would cause so much friction that the education committees would either have to reverse their decision or lose their seats. Moreover, the school age is essentially a matter for the local authority, with special knowledge of local conditions, to decide. If and when the majority of local authorities, or authorities controlling a majority of school places in the country, has decided in favor of raising the age, then, and not till then, will Parliament be justified in making the decision universal.

All this was explained at the time, but until the other day those who maintain that a conservative government is bound to be reactionary insisted that Lord Eustace Percy was blocking the path of progress. It must be admitted that some of his speeches on the subject went far to justify the suspicion that the consent of the board would be very difficult to obtain, and that he himself was far from enthusiastic on the subject. But his speech at Tunbridge Wells this week has left no further room for uncertainty. The government, he tells us, will raise the school age as soon as public opinion demands it, and this "must inevitably happen a few years hence." No one will question the statement that, if the demand is general, no government, of whatever party, will refuse to accede to it. On the other hand, the prophecy that there will be little, if any, opposition from any quarter except from the textile industries and the small distributive trader may prove rather an optimistic estimate. Hitherto labor opinion has expressed little beyond formal approval of the postponement of the beginning of wage-earning, and has coupled that approval with a demand for maintenance grants—a subject on which the president says nothing. His statement, however, that there is "a very strong tendency" for children to remain voluntarily at school till the age of fifteen is at all events a welcome and promising sign of the times. A gap between school and employment is always dangerous and demoralizing, for not only is mere knowledge forgotten but the experience of discipline and regular habits loses its effect. In times of scarcity of employment, such as the present, the loss both to nation and individual is necessarily far greater. Until the school age is raised, therefore, parents will clearly be well advised to avail themselves of the opportunities which exist already, in the way of evening classes or voluntary attendance at school, of keeping their children under discipline until employment can be found for them. And the policy of the government, as disclosed by Lord Eustace Percy in his latest speech, should encourage local authorities to increase such opportunities.—*The London Times.*

REPORTS

PRODUCTIVE SCHOLARSHIP

The American Historical Association has issued a statement summarizing the results of a survey, undertaken in an effort to prepare a program for the best expenditure of the income from an endowment of $1,000,000 now being raised by the association. A questionnaire was sent to holders of the degree of doctor of philosophy throughout the country by a committee composed of Professor Marcus W. Jernegan, of the University of Chicago, Professor Dana C. Munro, of Princeton University, Professor Carlton J. H. Hayes, of Columbia University, Professor Arthur M. Schlessinger, of Harvard University, and Professor William K. Boyd, of Duke University.

Colleges are demanding that more emphasis be placed on research, according to the report. Factors back of this demand are the method of training doctors of philosophy, the emphasis placed on the dissertation, the place of research in the sciences and in modern industrial life, and the belief that it is a desirable method of education. The report continues:

Another general reason for lack of productive research concerns the ability of the candidates, in relation to the demand for teachers who have received their degree. It is asserted that the Ph.D. degree in history has become commercialized; that it has become primarily a teaching degree; that large numbers receive the degree, when it is believed that they are unlikely to become consistent producers; that many candidates have no intention of producing, after graduation, and look on the degree as a passport or certificate necessary to get a "job."

Likewise presidents, especially of the smaller colleges, insist on having Ph.D.'s on their faculty, not because they expect or wish them to be productive scholars, but largely for advertising purposes. The large universities are thus crowded with mediocre graduate students, many of whom can not be taught the technic of research except with great difficulty. It is still more difficult, and often impossible, to inspire them with a passion for research. Low salaries and great rewards in other professions draw off the best talent and leave those with meager abilities as candidates for the Ph.D. in history. Thus an undue proportion of the professor's time is consumed, and he is hindered in his own productive work.

A fourth general reason for lack of production is the low social value placed on scholarship in the United States as compared with European countries. In particular, the assertion is made that the country does not care for research in the social sciences, in comparison, for example, with the value it places on research in the physical sciences; that when research is done, it receives little social recognition; that when society and the nation honor scholarship more, then improvement will take place.

The principal reasons given for this state of affairs are first the low level of culture in America, as compared with Europe or England, and second the value placed on material progress as measured in dollars and cents.

A fifth important reason for lack of production is a widespread belief that research does not pay. It is alleged that many who are productive fail to gain the reward they might reasonably expect; that presidents of colleges and universities give lip-service to research, but do not take it into consideration to any great extent in making promotions or increases in salary; that, therefore, Ph.D.'s seek to advance by teaching, wire-pulling and "social stunts."

Perhaps stimulated by the present emphasis on research in the physical, and now in the social sciences, many believe that the time has come for conferring two different degrees. One should be given after a different training from that now given for the Ph.D. It should certify the fitness of the candidate for teaching. The second should be given after a very complete training in research. It should certify proved ability in research, plus the passion for it.

In other words, let the university declare its belief that the candidate will be a consistent productive scholar and confer a real research degree. Another plan is that of making a clearer distinction, especially in the larger colleges and universities, between those members of faculties who are good teachers and those who are good research men. The latter should not be heavily burdened with teaching as is now so often the case.

The report recommended as remedies the development of a greater interest in research; greater encouragement to doctors of philosophy who are capable of advanced work; more "weeding out" of candidates for the degree; more money for travel and publication, and greater recognition of scholarship in the professional world.

EDUCATIONAL RESEARCH AND STATISTICS

RESULTS OBTAINED IN A SPECIAL "HOW TO STUDY" COURSE GIVEN TO COLLEGE STUDENTS

THAT many college and university students are unable to succeed with their work in a way that is satisfactory to their instructors, and that they have great difficulty in orientating themselves to the life and work of a college or university is generally known. At Indiana University, for example, only about half of the freshman students who entered the university last year (1926–27) completed their total enrolment in their first semester in a way that was satisfactory to their instructors. Many failed in all the courses in which they were enrolled; sixteen per cent. of these 1,200 freshmen failed in half of the courses in which they were enrolled during their first semester. In fact, it is the practice of many universities to dismiss from one fifth to a third of its freshman class each year because of their inability to do their academic work.

That careful direction and specific supervision of the efforts and work of college freshmen is needed is shown by the fact that most colleges and universities are giving some form of special orientation or "How to Study" course for their freshmen. In these courses various kinds of special help are given to freshmen and failing students. That there is great need for such remedial instruction and specific personal help is demonstrated by the marked development during the past five years of the personnel work done in the colleges and universities of the country.[1] That most of these failures are due to remedial causes[2] and that a type of instruction can be given that will enable students to learn how to do their work in a more effective way has been shown by recent studies of the working methods of college students, and investigations which sought to determine the cause of their failure in college.[3]

These studies have shown that acquiring more effective methods of work is a case of individual learning where the persons making the improvement may be greatly helped if given the right kind of assistance. If a student is capable enough, or if he has a strong enough desire for making improvements in his methods of work, he will make marked and more or less continued improvement in this direction without any special help being given him from the outside. But, as in every case of acquisition, the learners in this field can be materially helped by the advice and direction of someone who knows exactly what must be done to make the greatest possible amount of improvement in this type of learning; someone who knows which of these necessary things should be done first, which second, and which ones later or last. Someone who knows from experience or as a result of scientific study how each of these essential things can best be done; who knows the difficulties which this type of learning normally presents to the learners in this field and how some of these difficulties may best be avoided or overcome, someone who can give the learners help in checking up on the accuracy of his work or help him measure the improvement he is making in learning to do each one of these necessary things.

For the same reasons that we do not expect or require a prospective physician or lawyer to master unaided the knowledge and skill which pertains to his profession, we should not expect college or high-school students to learn by sheer experience and by the trial and error method—used by the race to make its slow and laborious advancements in every field—how to conserve their energy and time, or how to use both most effectively when confronted by their tasks. We should not expect them to learn unaided how to make the right use of ideals or specific purposes and plans, how to make an effective analysis of their tasks in order to find the best ways of performing them, how to master the higher phases of the art of reading, or even how to make the

[1] Compare W. F. Book, "Need for a New Type of Educational Personnel," *Journal of Educational Personnel*, 1927.

[2] See W. F. Book, "How Well College Students Can Read," SCHOOL AND SOCIETY, August 20, 1927.

[3] W. F. Book, "How to Succeed in College," Warwick and York, 1927; see also Mark A. May, "Predicting Academic Success," *Journal of Educational Psychology*, Vol. 14, pp. 429–440.

conditions under which they must live and work most helpful for the things which they have to do.

In mastering these and other problems pertaining to this fundamental type of learning, students need specific direction and expert help. Such help can be given and represents, in the opinion of the writer, one of the most valuable phases of a college course. If every teacher could carry on his instruction in a way which would lead his students to do their work in the proper way, instead of being most interested, as he usually is, in their mastery of the subject which he teaches, regardless of the methods of work used in its acquisition, or of the attitude of mind and the habits of thought and work that are acquired in the process, such remedial instruction would not need to be given in a special How to Study or orientation course. But such is unfortunately not the case. Special help for learning how to work at one's tasks in the most effective way must, therefore, be given to most college students in order to enable them to succeed with their work, and to help them establish the kind of habits which alone will insure their success not only in college but in later life.[4] Such habits can, however, not be incidentally acquired. They must be established by getting the students definitely interested in making further and continued improvements in this direction and by giving them the encouragement and help that is needed to establish the particular sets of habits which give them the power to deal most successfully with all their tasks.

Many attempts have recently been made to give college students this type of direction and help. It is the purpose of this paper to describe some of the results which have been obtained in a special "How to Study" course given at Indiana University during the past academic year.

1. General Aim or Purpose of the Instruction Given

Since a student's success in college and in later life depends so largely upon his past successes and methods of work, or upon his ability to save and profitably use his energy and time, upon the kind of attention which he gives to the restoration of his energy or available powers, upon his endurance and power to resist and recover from the normal effects of his work, upon the character and strength of his ideals, and upon his ability to adjust his ambitions and working load to his mental ability and physical strength, upon his ability to read or to get facts accurately and quickly from books, upon the attention which he gives to making all objective and psychological conditions favorable for his success, upon how well he can plan his work and plan for the proper use of his energy and time, and upon how well he can adjust his working load to these and other factors which condition his success, we naturally tried to give the students enrolled in our "How to Study" classes specific help along all these lines.

2. Gains Made in Learning to Conserve Their Available Time

Since our previous studies had shown that most college students waste an enormous amount of time,[5] all our "How to Study" classes were shown how to make an effective working schedule, one that would enable them to use all their time in a profitable way. They were shown not only how to conserve their energy and time but how to use both in a more profitable way. By actual experiment the students in two "How to Study" classes were found to be using respectively only 76 and 84 per cent. of their total available time in a way that was judged to be profitable by them. After giving these same students some definite help and practice in planning their work and in making a more efficient and workable schedule, showing them just what they must do to make an efficient and practical plan for using *all* their available time, and what they must do to learn how to execute such a detailed plan promptly, the percentage of efficiency in their ability to use their total available time rose from 76 to 96.3 per cent.

[4] Compare on this point W. F. Book, "Learning How to Study and Work Effectively," Chapter 1, Ginn & Co., Boston, 1926.

[5] See W. F. Book, "How to Succeed in College," Chapter III, Warwick and York, Baltimore, Md., 1927.

for one of the classes, and from 84 to 98.1 per cent. for the other.

The best part of the instruction and experiment was that it revealed to each student not only how inefficient he was in this respect, but why this amount of time was lost, and therefore showed him what had to be done to make himself more efficient in this particular regard.

The habit of properly planning for the use of one's available time, and learning how to carry out one's schedule or plans, can not, of course, be established in a single semester. But a marked and measurable amount of improvement in this regard was made; a genuine interest in this element of personal efficiency was aroused; a method was given to each student that enabled him to measure objectively his own efficiency in this respect and to determine how much progress he had made to date. This enabled him to determine at any time how inefficient he still was in his power to use all his time in a profitable way and so to make himself thoroughly efficient in this regard.

3. Improvements Made in Learning to Read

How inefficient college students really are in their ability to read or to get facts accurately and quickly from books was shown in an earlier report on "How Well College Students Can Read."[6] Most college students are very inefficient in this respect. All our "How to Study" groups were, therefore, shown how inefficient they really were in their ability to read, and also what they must do to learn to deal more successfully with this and certain other typical tasks which they have to perform over and over almost every day, such as preparing their assignments more effectively and rapidly; how to memorize facts in the most economical way and in a manner that would enable them to apply this knowledge in their future thinking and work; how to make a systematic investigation of a particular subject or problem, and how to organize the results of such a study in the form of a finished report; how to apply themselves more completely and continuously to their tasks and work.

[6] See W. F. Book, "How Well College Students Can Read," SCHOOL AND SOCIETY, Vol. XXVI, August 20, 1927, pp. 242–248.

The results which we obtained in improving the reading ability of six regular college classes has been set forth in detail by the writer in another article[6] and need only be mentioned here. By means of two types of reading tests the reading ability of 900 college freshmen and 214 upper classmen was determined, both their power to note and comprehend what was assigned and read, and their ability to read and prepare a standardized assignment in a text, such as students are required to prepare each day in almost every subject they study. In our "How to Study" classes, last year, the per cent. of efficiency in preparing a standardized assignment was increased for all classes 37.3 per cent. while their ability to read more rapidly and accurately was improved 102 per cent. Less formal instruction given to two educational psychology classes resulted in gains almost equal to those obtained in the special "How to Study" classes.[7] The complete results for the former groups are shown in Table I below:

TABLE I

GAINS MADE IN LEARNING TO READ BY TWO "HOW TO STUDY" CLASSES

Tests	Average per cent. of efficiency	Efficiency ratio or average efficiency per unit of time	Cases
In first test before instruction began	60	1.06	54
In second test	84.1	1.84	54
In third test given near close of semester	97.3	2.14	54
Per cent. of improvement	37.3	102.00	54

4. Gains Made by College Students in Learning How to Plan and Do Their Work More Successfully

Successful planning of one's work consists (1) of listing the things to be done during the

[7] Compare W. F. Book, "How Well College Students Can Read," SCHOOL AND SOCIETY, Vol. XXVI, pp. 242–248, August, 1927.

time for which the plan is made, and arranging these tasks in the order in which they are to be taken up; (2) making a study of each task with a view of ascertaining how it can best be done and the time that will be required for its performance; (3) making a schedule embodying these items, or a detailed plan which will show when each thing is to be begun and how much time is to be allotted to its performance; (4) making arrangements for carrying out this plan, which should include: (a) securing the needed equipment and tools, (b) making all objective and psychological conditions as favorable as possible for the accomplishment of these tasks, (c) preparing a definite set of instructions or a plan for carrying out this working schedule; and lastly, (5) carrying out this detailed plan as you have made it.

Some planning must, of course, be done by every student or person who accomplishes any kind of work. But there are many grades of planning done by the workers of the world. Those who accomplish the most make the best plans and the best provisions for carrying out their purposes and plans. Efficient planning and the ability to carry out one's plans is, in fact, the most important single factor in successful work of every sort. But college students were found to be woefully deficient in these respects.[8] Instead of their energies being directed by a concrete and well-defined plan, instead of being constantly spurred on to greater and continued endeavor by the items in their schedule until their purposes have been successfully carried out, their behavior, while at work, is mainly controlled by chance stimuli or by the circumstances which surround them at the time. This causes gross inefficiency in their accomplishments and much waste of their energy and time.

Definite and continued help was, therefore, given in our "How to Study" classes along these lines. The students were shown the need for successful planning and the personal value which comes from a well thought-out and workable plan. They were shown how a successful plan for any task and for a larger undertaking must be made. They were shown that to make a successful and workable plan for their work, they must make it a point to study their tasks to determine how each can best be performed; and by actual experiment and investigation they were led to discover for themselves not only how each thing could best be done, but how much time was needed for its performance. Various aids to the successful dispatching of a plan were also pointed out and the principle of planning in all its phases gradually applied to their daily tasks and university work, so that actual practice was given to the specific habits that must be established in learning to plan one's work in the proper way.

That real progress was made in establishing the habits that enabled our various student groups to work at their tasks in a more effective way is shown by the marked improvement they made in learning to do their university work in a more successful way. Former failures were turned into success. More credits and credit points[9] were made by the same students after the instruction and practice in planning was given them than they made before. They became more interested in their work and in learning how to improve their methods of work. One student who enrolled in the "How

[8] W. F. Book, "How to Succeed in College," Chapter XI, Section 3. Warwick and York, Baltimore, Md. 1927.

[9] The number of credit points earned by students at Indiana University is figured by the deans on the basis of the grades made or quality of work done by the student. If he barely passes in his work, that is to say makes a grade of 65 to 74 or a ranking of D, on his semester's work in any subject, he gets his credit hours in that subject but no credit points. If he makes a grade of 75 to 84 or a C ranking on his work, he gets as many credit points as there are credit hours in the course, *i.e.*, three credit points for a three-hours' course and five credit points for a five-hours' course. If he gets a B ranking on the course or makes a grade of 85 to 94 he earns two credit points for each hour of work in which he is enrolled. If he makes an A in the course, he would get three credit points for every hour's academic work he was doing. This means that if he were enrolled in fifteen semester hours of work and made an A or grade of 95 to 100 in all his courses he would earn forty-five credit points during the semester.

TABLE II

AVERAGE NUMBER OF CREDIT POINTS MADE BY STUDENTS ENROLLED IN "HOW TO STUDY" COURSES IN 1926–1927 COMPARED WITH THE CREDIT POINTS MADE BY ALL FRESHMEN DURING THE SAME SEMESTERS

Groups compared	Average No. of Credit Points made in all semesters *before*, *while* and *after* taking the course			Average percentile rating of group on intelligence test	Total cases
	Before	During	After		
Four regular "How to Study" classes	16.04	20.21	22.50[1]	50.75	76
Two Lab. sections where instruction was spread over two semesters—24 sophomore, junior and senior students	18.02	22.65	24.58	61.00	24
43 freshmen taking the course		20.80	23.65	58.39	43
Entire freshmen class in 1st and 2nd semester		16.01	15.87	57.00	1176

[1] Record for 36 students who took the course in the first semester.

to Study" course in the second semester of his sophomore year had made nothing higher than a C+ in any of his work with a goodly sprinkling of D's. In the next semester his grades were mostly B's and A's, and in his senior year he made nothing but A's. He attributed this success largely to the help he secured in the "How to Study" course. Another student who had to work his way through college increased his earning power after taking the course from $10.00 per week to $17.25. He added one and one half hours to the time devoted to sleep each day, increased his enrolment three hours and made B+ or A in all his university work. This increased efficiency he attributed entirely to the help he secured in this course and to the interest which it aroused in him in improving his methods of work.

The actual gains in academic success made by the various student groups who were enrolled in our "How to Study" course during the past school year (1926–27) is given in Table II. As may be seen by reference to the table the amount of improvement made is very marked, and it should be remembered that about half of the students enrolled in the course were sent into these classes by the deans because they had been failing in most of their work. This greatly decreased their chances for success. The remedial instruction on learning how to study more effectively should be given not to students who are failing in their work and who therefore have already established a habit of failure, but to students who really want to improve their methods of work. It is very difficult to help students who have already developed the habit of failing with practically everything they have attempted to do. But very decided improvements were made by all our sections as the data contained in Table II so clearly show.

A study of this data will show that the four classes who took the work as a regular two-hour elective course made an average of one more credit and 4.17 more credit points per pupil during the semester they took the course than these same students had ever made before in any semester. The semester after they took the course, these same 76 students, about half of whom had been sent into the class by the deans because they had been failing in their previous work, made an average of 6.46 more credit points per pupil. In one of the sections, half of the class were chronic failures and were

on probation at the time. They not only got along well in their work that semester but made continued improvements in their work the next semester. One of the writer's students who had been doing a poor grade of work in the two semesters before he took the course, made 41 credit points the semester he took the course, and 44 credit points the semester after he had the course. He had never made more than 18 credit points in any previous semester.

The best results, however, were obtained in the two laboratory classes where this instruction was given throughout the year in connection with their laboratory work in psychology. These two sections contained 67 students and were taught by two different instructors. The first semester after they had begun the work, the 24 upperclassmen who were enrolled in the course made an average of 1.8 more credits than they had ever made before in any semester, and 4.63 more credit points per student. In the next semester they did better still, making an average of 6.56 more credit points per pupil than they had ever made before taking the course.

Better results still were obtained by the 43 freshman students enrolled in these two classes. They made an average of 20.80 credit points per pupil their first semester. The average number of credit points made by the entire freshman class in this same semester was 16.01. In the second semester these same 43 freshmen made an average of 23.65 credit points per student, which was 7.78 credit points better than the record made by all freshman students in the university in the same semester. There was also a marked improvement over the work done in their first semester.

What is still more significant, perhaps, is the fact that 87 per cent. of the freshman students enrolled in these two "How to Study" sections completed their total enrolment in the university in a way that was satisfactory to *all* their instructors, while only about half of the freshman students entering the university last year, (46 per cent. of the boys and 63 per cent. of the girls) completed their total enrolment in a satisfactory manner. The average intelligence rating of this group of 43 freshmen was no higher than for the entire freshman class.

These and other facts are shown by the data given in Table II. And it should be added that these results were obtained by three different instructors and before we discovered the serious deficiencies which exist among college freshmen in their ability to read. The best results in a "How to Study" course can not, of course, be secured until we know what sort of help college students need and really must have to make a success of their work.

5. Other Things to Which the Principle of Planning was Applied

Marked improvements were also made by applying the principle of planning to the factors which lie at the very basis of a successful and happy life, such as getting the students to plan more definitely for the conservation of their energy and health; to plan for the full restoration of the energy consumed by their daily activities and work; to plan to make a more effective use of the principle of ideals, seeing that a proper coordination is maintained between their more immediate and ultimate purposes and plans; getting them interested in developing a method of work that would insure more definite and continued improvement in this type of learning; in a word, getting them interested in a plan of life and work that would insure the establishment of the particular habits that must be acquired to make one truly efficient in his work and life.

Space prevents us from giving examples and concrete data on all these points. But from the facts already reviewed it is clear that college students need much remedial instruction along these lines; that college students can be definitely interested in the problem of improving their methods of work, and that real practical help can be given them for improving their method of work. We conclude that a type of remedial instruction, something like that given to our "How to Study" groups, should be given, not merely to the students who are having difficulties with their work, but to all who are ambitious to improve their methods of work or to learn to study and work in the most effective way.

William F. Book

Indiana University